Teaching Family Physicians To Be Information Masters

An Evidence-Based Approach to Medical Education

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Session Overview

- What is Information Mastery/Evidence-Based Medicine?
  - An attitude switch from Authority to Evidence
  - Limitations of current techniques
  - An active, practical approach for “informed consumers”

Why Become an Information Master?

- **Clinicians as “informed consumers” of research/Catching your own fish**

Why Become an Information Master?

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- **Enhancing Dissemination**

How Well Do We Disseminate New Information?

- Recognizing Failures In Communication And Learning
  - Fineberg 1987: Of 28 “Landmark” trials, only 2 had an immediate (1-2 year) effect on clinical practice
  - Evans 1984: The strongest predictor of knowledge of hypertension was the clinician’s year of graduation

Why Become an Information Master?

- Clinicians as informed consumers of research/Catching your own fish
- Enhancing Dissemination
- **Avoiding the “ping-pong”**

Why Become an Information Master?

- Clinicians as informed consumers of research/Catching your own fish
- Enhancing Dissemination
- Avoiding the “ping-pong”
- **Encouraging Outcomes-Based Research**

Attitude Shift

- Pride
- Ethics
- Confidence
- Empowerment
- Responsibility

Awareness of Responsibility Role

- Responsibility to maximize benefit to patients, self, and society (it's not an academic exercise but a moral imperative)
- Ethical implications of managed care

Awareness of Responsibility Role

- Participation in developing and implementing practice guidelines
- Taking a stand when new, better information opposes traditional dogmas or “experts”

Lofty Philosophical Goal

Doing the “Right Thing”

Finding “The Truth”

“The Truth”: What is it?

- Community Consensus
- HMO dictum
- The bottom line
- What the “experts” do
- What lawyers tell us to do

“The Truth”

A “probability” statement . . .
what we do for patients does more good than harm

Medical Information System

- Journal
  - "Throwaways"
  - Monograph
  - Practice Guideline
  - CME course (lecture)
  - Clinical Experience
  - Colleagues
- Textbooks
  - Pharmaceutical Reps
  - Computers
  - Audiotapes
  - Newsletters
  - News media
  - Patients

Information Anxiety

"The frustration that occurs when there is a great deal of information, but it doesn't tell us what we want or need to know."

Richard Wurman

Information Anxiety

- Most clinicians suffer from ***too much*** information
- High potential for “ping-pong” between different sources
- Where is “The Truth”?

Maladjustments to Information Anxiety

- Frustrated, lacking in confidence
- Wait for the expert answer
- Rigid and dogmatic attitude

Ways of Reaching The Truth-A Medical "Paradigm Shift"

- ***Seduction***:
  - Faith in the recommendations of others
- ***Induction***: Reductionism
  - The scientific method
  - What "ought to" work
- ***Deduction***: Outcomes/Evidence-Based
  - "Put it all back together"
  - Demonstration that it **does** work

Why Current "Critical Appraisal" Techniques Need to be Enhanced

- De-emphasize sources other than journal articles
  - Clinicians go from conferences/rounds to CME/experts
- Unrealistic and inefficient use of time
  - 1-2 hours per week not practical
  - journal articles answered only 1% of practice-based questions

Why Current "Critical Appraisal" Techniques Need to be Enhanced

- Potential for harm: Amplifying "medical gossip"
  - must be aware of total "conversation"
- "Problem-driven" vs "Keep-up" mode
  - "Traditional EBM" focuses on answering practice-based questions
  - Clinicians concerned with staying "up-to-date"

Bottom Line

We need to learn not only ***how*** to read the medical literature,

but ***what*** to read and ***when***

The Usefulness Equation

Usefulness = $\frac{\textit{Validity} \times \textit{Relevance}}{\textit{Work}}$

of any source

Validity

- The Intimidating part of Information Mastery
- Technique: EBM working group
- Apply to other information sources
- Responsibility: Role must be realistic: self vs. group (small group CME) vs. well chosen expert

Work

- Basic law of human behavior: lowest amount of work you can get away with (Efficiency)
- Varies with source and your need
- Recognizing the balance
- “Informatics”

Relevance: Type of Evidence

- **POE**: Patient-oriented evidence
  - mortality, morbidity, quality of life
- **DOE**: Disease-oriented evidence
  - pathophysiology, pharmacology, etiology

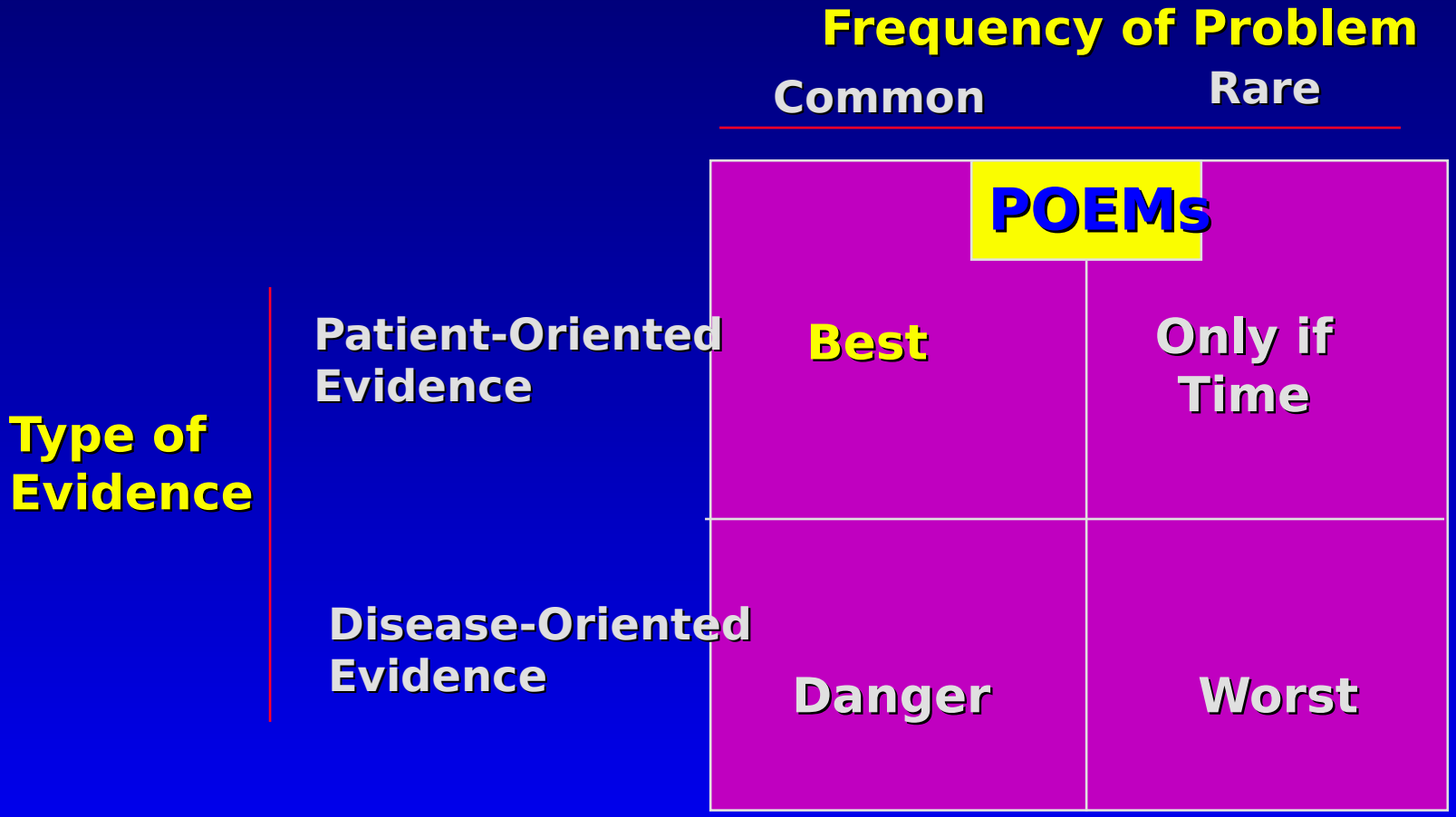
Outcomes-Based Jargon

- DOE = Intermediate/ Surrogate outcome
- POE = Final outcome

DOEs vs. POEMs

DOE →		POEM
Gemfibrozil lowers cholesterol	Gemfibrozil lowers CV morbidity/mortality	Gemfibrozil lowers overall mortality
Intensive insulin tx can keep FBS <140 mg%	Intensive insulin therapy can decrease microvascular complications	Intensive insulin therapy can decrease mortality and improve QOL

Relevance


Frequency of Problem
Common
Rare
POEMs
Type of Evidence
Patient-Oriented Evidence
Disease-Oriented Evidence
Best
Only if Time
Danger
Worst

Feeling Good About *Not* Knowing Everything: Information Mastery

- Prioritize efforts to **identify**, **validate**, and **apply** common POEMs
- Responsibility: less to read, but more important to find and evaluate
- Consider work factor with rare POEMs
- Ignore and avoid rare DOEs

What about Common DOEs?

- Allow yourself permission to ignore or deflect- confidence to reject
- If it's not a valid POEM, it's not necessarily so
- Proceed with caution- avoid "medical gossip"
- Keep an open mind- be ready to update DOEs with POEMs

Empowerment

“Those who do not remember the past are condemned to relive it”

- George Santayana

“Knowledge is Power”

- Sir Francis Bacon

“In a time of turbulence and change, it is more true than ever that knowledge is power”

- John F. Kennedy

It’s a Jungle Out There!

- Usefulness equation is the map through the jungle
- Goal: Get in, get where and what you want, and get out quickly

The Flora and Fauna of the Medical Jungle

- Original Research
- Academic Reviews
- Decision/Cost Analysis
- Medical Cookbooks (Practice Guidelines)
- Translation Journals
- Continuing Medical Education
- Clinical Experience
- Experts
- Newsletters and Survey Services
- Pharmaceutical Representatives
- Computer sources
- Audiotapes
- Patients/Qualitative Research

WORK: The How, Where, and Why

- How: Choice and efficient use of “mode of transportation”
- Where: Source of information
- Why: Reason for searching

The How: Mode of Transportation

- Efficient computer usage: search strategies, understanding of MeSH, limitations; internet, CD-ROM
- Personal filing system: what to keep, how to file for retrieval
- Library: Hospital vs. library, use of hospital librarian

The Why

- **Hunting:** To answer a specific question
- **Foraging:** To keep up with new developments

The Why

- **Retracing:** To review previously learned information
- **Sporting:** To keep up with an area of interest

The Where: The Flora and Fauna of the Medical Jungle

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How to Make the Most of Original Research

- Maximizing usefulness by balancing formula with how, where, & why
- Teaching This
- Enhancing Traditional EBM

How to Make the Most of Original Research

"For the clinician attempting to nourish lifelong learning, medical journals may seem to provide slim pickings: A few scraps imbedded in a mass of materia nonmedica, from preclinical test tubes that only scientists can digest and a malnourishing mishmash from preliminary studies."

RB Haynes, 1993

Original Research

- “Knowledge creation” vs. “translation” journals
- Good for hunting: temptation to bypass
- Fountain from which all knowledge flows

Foraging

- Concentrate on “high yield” journals with favorable POEM:DOE ratio
- Scan table of contents for titles of interest
- Read conclusion of abstract
- Consider three questions to determine relevance

Identifying “Common” POEMs

- Will this information have a direct bearing on the health of my patients (is it something they care about)?
- Is the problem common to my practice?
- If true, will it require me to change my current practice?

Conclusions

- Read few, only if forced
- Get rid of “bedside” stack
- Use time for other things (e.g.., letters to the editor, JFP/ACP Journal clubs, EBM, monthly searches, hike in the mountains)
- “POEM bulletin boards”
- The Cochrane Library

Where we go next: The BIG Picture

- Evaluation of articles: therapy, diagnosis, reviews, *prognosis,* and decision analysis (the HOW to read)
- Exploring each section of the MIS jungle with the Usefulness Equation as our map
- Identifying “WHEN to read” and “What to read”

The Information Business - Obtaining Support